**Unit 1 Study Guide**

You should know…

* The Law of Conservation of Energy and how it applies to both labs
* Whether any energy transformation is ever 100% efficient, and why it is/isn’t.
* All topics covered on the first quiz
* How to make a proper graph
* How to calculate the slope of a line and give the meaning of the slope
* The energy transformations that occurred in each lab
* Be able to match an energy type with its definition
* Be able to match an energy type with an example
* The relationship between the amount of energy put in and the amount of energy that comes out
* The relationship between heat and light

Define the following and give an example of each:

Gravitational Potential Energy:

Chemical Potential Energy:

Nuclear Energy:

Kinetic/Mechanical Energy:

Electrical Energy

Light Energy

Solar Energy

Wind Energy

Heat Energy

Sound Energy

2. What is the Law of Conservation of Energy? Did this law apply to our labs? Explain.

3. Is any energy transformation ever 100% efficient? Explain.

4. What energy transformations took place in the Pile Driver Lab?

5. What energy transformations took place in the Generating Electricity Lab?

6. Where did the energy to light the bulbs in the Generating Electricity Lab come from?

7. What was the relationship between the amount of energy put into the hand crank and the voltage generated? Why did this happen?

8. What is the relationship between heat generation and light generation?

9. Make a proper graph of the following data. DO NOT FORGET:

A proper scale (highest value rounded / number of lines)

A proper title (DV vs. IV)

Labeled axes with units

Best fit line

A student is able to measure the temperature of a piece of steel wool as they crank a hand generator attached to the steel wool. She ran 5 minute-long trials, rotating faster each trial. As she cranked, her partner counted her rotations per minute. Below is her data for each trial in RPMs (rotations per minute) of the hand crank and degrees Celcius of the steel wool:

|  |  |
| --- | --- |
| RPMs (rpm) | Temperature (Degrees C) |
| 20 | 20 |
| 40 | 25 |
| 80 | 30 |
| 120 | 54 |
| 160 | 71 |

10. Calculate the slope for the graph you just made. Show all work, reduce your fraction, and DON’T FORGET UNITS. What is the meaning of the slope?